

CLAIMS:

1. A Phase Locked Loop comprising a frequency detector including an unbalanced quadricorrelator, the quadricorrelator comprising a frequency detector including double edge clocked bi-stable circuits coupled to a first multiplexer and to a second multiplexer being controlled by a signal having a same bitrate as the incoming signal, and a
5 phase detector controlled by a first signal pair provided by the first multiplexer and by a second signal pair provided by the second multiplexer.
2. A Phase Locked Loop as claimed in claim 1, wherein the frequency detector comprises a first pair of double edge clocked bi-stable circuits coupled to the first
10 multiplexer, and a second pair of double edge clocked bi-stable circuits coupled to the second multiplexer, which first and second pairs are supplied by mutually quadrature phase shifted signals respectively to provide the first signal pair and the second signal pair indicative for a phase difference between the incoming signal and mutually quadrature phase shifted signals.
- 15 3. A Phase Locked Loop as claimed in claim 1, wherein the phase detector comprises a D flip-flop receiving the first signal pair and being clocked by the second signal pair, the second signal pair being inputted to respective gates of a first transistors pair for determining a state ON or OFF of a current through said first transistors pair.
- 20 4. A Phase Locked Loop as claimed in claim 3, wherein current through the first transistor pair biases a second transistor pair, the second transistor pair receiving the first signal pair and generating an output signal indicative for a frequency error between the incoming data signal and Clock signals.
- 25 5. A Phase Locked Loop as claimed in claim 2, wherein the mutually quadrature phase shifted signals are generated by a voltage controlled oscillator.

6. A Phase Locked Loop as claimed in 5, wherein the error signal is inputted to a coarse control input of the voltage controlled oscillator via a first charge pump coupled to a first low-pass filter coupled to an adder.
- 5 7. A Phase Locked Loop as claimed in claim 6, wherein a fine control input is controlled by a signal provided by a phase detector coupled to a second charge pump coupled to second low-pass filter.